Chemistry of Heterocyclic Compounds, Vol. 41, No. 2, 2005

REACTION OF ENAMINES OF THE 1,2,3,4-TETRAHYDROBENZO[*f*]ISOQUINOLINE SERIES WITH 2,3-DICHLORO-1,4-NAPHTHOQUINONE

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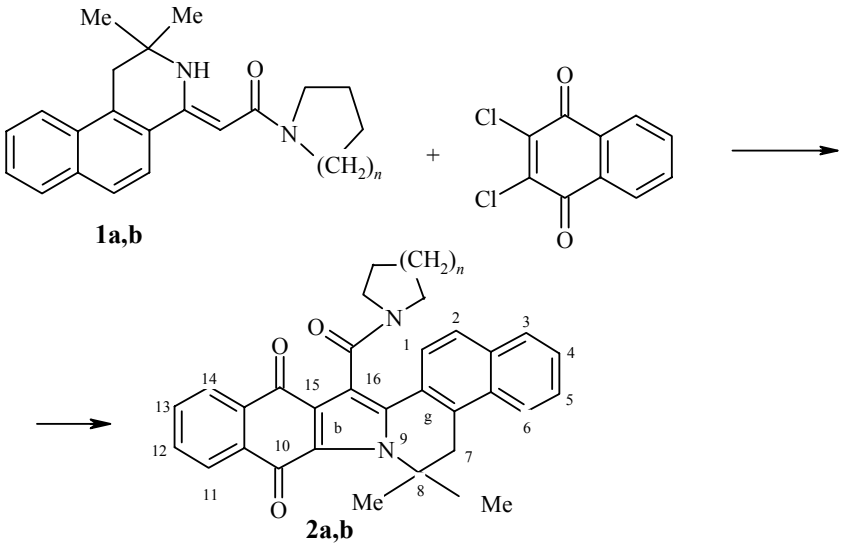
Keywords: enamines, derivatives of 1,2,3,4-tetrahydrobenzo[*f*]isoquinoline, 2,3-dichloro-1,4-naphthoquinone, 16-aminocarbonyl-7,8-dihydronaphtho[1,2-*g*]naphtho[2,3-*b*]indolizine-10,15-diones.

2,3-Dichloro-1,4-naphthoquinone is a reagent that makes it possible to synthesize diverse polynuclear quinones [1]. Reactions of this compound with cyclic enamines have not been studied to date. Continuing our research on the reactivity of enamines, derivatives of 1,2,3,4-tetrahydroisoquinoline [2], we have observed that when compounds **1a,b** [3] are boiled in benzene with 2,3-dichloro-1,4-naphthoquinone in the presence of triethylamine, they form hexacyclic quinones **2a** (n = 1) and **2b** (n = 2).



Amides **2a,b** are bright-yellow crystalline substances that exhibit the property of halochromism: when dissolved in concentrated sulfuric acid, the solution takes on a bright-blue color.

The compounds **2a,b** obtained and compounds similar to them can be considered as novel potential synthons, dyes, and drugs.

8,8-Dimethyl-16-(N-pyrrolidinocarbonyl)-7,8-dihydronaphtho[1,2-*g*]naphtho[2,3-*b*]indolizine-10,15-dione (2a). 2,3-Dichloro-1,4-naphthoquinone (2.27 g, 10 mmol) was added to compound **1a** (3.20 g, 10 mmol) in benzene (150 ml) in the presence of triethylamine (2.95 ml, 21 mmol). The mixture was boiled for 30 min;

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the solution darkened and a precipitate was formed. After cooling down to 20°C, the mixture was diluted with hexane (150 ml) and then the precipitate formed was filtered out and carefully washed with water, dried, and recrystallized from 2-propanol: yield 62%; mp 253-255°C. The ^{1}H NMR spectrum (100 MHz, $CDCl_3$), δ, ppm: 1.70 (6H, s, $2CH_3$); 1.80-1.95 (4H, m, $2CH_2$–C); 3.0-3.95 (4H, m, $2CH_2$–N and 2H, s, CH_2-7); 7.30-8.05 (10H, m, Ar). IR spectrum (vaseline oil), ν, cm^{-1}: 1635 and 1670 (C=O). Found, %: C 78.38; H 5.40; N 5.90. $C_{31}H_{26}N_2O_3$. Calculated, %: C 78.46; H 5.52; N 5.90.

8,8-Dimethyl-16-(N-piperidinocarbonyl)-7,8-dihydronaphtho[1,2-*g*]naphtho[2,3-*b*]indolizine-10,15-dione (2b). Obtained similarly from compound **1b** (3.34 g, 10 mmol), yield 70%; mp 182-183°C. ^{1}H NMR spectrum (100 MHz, $CDCl_3$), δ, ppm: 1.90 (6H, s, $2CH_3$); 1.50-1.65 (6H, m, $3CH_2$–C); 3.10-4.00 (4H, m, $2CH_2$–N and 2H, s, 7-CH_2); 7.30-8.10 (10H, m, Ar). IR spectrum (vaseline oil), ν, cm^{-1}: 1640 and 1670 (C=O). Found, %: C 78.53; H 5.58; N 5.87. $C_{32}H_{28}N_2O_3$. Calculated, %: C 78.67; H 5.73; N 5.73.

This research was performed with the financial support of the Russian Foundation for Basic Research (grant No. 04-03-96042).

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